1

On the effect of historical SST patterns on radiative feedback

Timothy Andrews et al.

Supplementary Tables

Contents:

17

	abrupt-4xCO2				$\lambda_{1871\text{-}2010}$ (W m^{-2} K^{-1})			$\lambda_{1871\text{-}1980}$ (W m^{-2} K^{-1})			$\lambda_{1981\text{-}2010}$ (W m^{-2} K^{-1})	
	λ_{4xCO2} (W m^{-2} K^{-1})	$\lambda_{4xCO2\_1\text{-}20}$ (W m^{-2} K^{-1})	$\lambda_{4xCO2\_21\text{-}150}$ (W m^{-2} K^{-1})		AMIP	HadISST1		AMIP	HadISST1		AMIP	HadISST1
CAM4	-1.95	-1.99	-1.90		-2.10	-2.07		-1.99	-2.03		-2.19	-2.20
CESM2	-1.81	-1.88	-1.74		-2.18			-2.01			-2.53	
CNRM-CM6-1	-1.76	-1.81	-1.74		-2.13			-1.91			-2.23	
CanESM5	-1.84	-1.89	-1.81		-2.23			-2.17			-2.33	
ECHAM6_3	-1.74	-1.75	-1.68		-2.07	-2.03		-1.94	-1.93		-2.20	-2.19
GFDL-AM3	-1.94	-2.03	-1.93		-2.18	-2.20		-1.88	-1.97		-2.34	-2.28
GFDL-AM4	-1.81	-1.90	-1.78		-2.18	-2.14		-2.03	-2.07		-2.23	-2.32
HadAM3	-1.79	-1.84	-1.71		-2.14	-2.08		-2.04	-2.02		-2.22	-2.16
HadGEM2	-1.66	-1.81	-1.64		-2.10	-2.08		-1.96	-1.97		-2.16	-1.94
HadGEM3-GC31-LL	-1.80	-1.88	-1.78		-2.27	-2.17		-2.08	-2.07		-2.28	-2.24
IPSL-CM6A-LR	-1.55	-1.58	-1.54		-1.91			-1.81			-1.95	
MIROC6	-1.94	-1.99	-1.91		-1.83			-1.78			-2.15	
MRI-ESM2-0	-1.94	-2.04	-1.86		-2.23			-1.94			-2.47	
MPI-ESM1-2-LR	-1.78	-1.81	-1.78		-2.06	-2.00		-1.89	-1.91		-2.13	-2.16
MEAN	-1.81	-1.87	-1.77		-2.12	-2.10		-1.96	-2.00		-2.24	-2.19
1.645*sigma	0.18	0.19	0.17		0.19	0.11		0.17	0.09		0.23	0.18

20

21

22

23   **Table S2: Shortwave clear-sky feedback parameters in *amip-piForcing* and *hadSST-piForcing* simulations over various historical time-periods, as well as**
24   ***abrupt-4xCO2* sensitivity parameters.**

	abrupt-4xCO2				$\lambda_{1871-2010}$ (W m^{-2} K^{-1})			$\lambda_{1871-1980}$ (W m^{-2} K^{-1})			$\lambda_{1981-2010}$ (W m^{-2} K^{-1})	
	λ_{4xCO2} (W m^{-2} K^{-1})	λ_{4xCO2_1-20} (W m^{-2} K^{-1})	λ_{4xCO2_21-150} (W m^{-2} K^{-1})		AMIP	HadISST1		AMIP	HadISST1		AMIP	HadISST1
CAM4	0.87	0.84	0.89		0.99	0.98		0.77	0.73		0.50	0.39
CESM2	0.54	0.72	0.44		0.77			0.74			0.40	
CNRM-CM6-1	0.82	0.84	0.60		1.01			0.72			0.47	
CanESM5	0.78	0.82	0.74		0.87			0.75			0.58	
ECHAM6_3	0.66	0.67	0.69		0.88	0.90		0.61	0.63		0.42	0.41
GFDL-AM3	0.69	0.65	0.67		0.77	0.76		0.65	0.64		0.63	0.43
GFDL-AM4	0.77	0.79	0.67		0.74	0.75		0.59	0.58		0.26	0.36
HadAM3	0.58	0.58	0.58		0.78	0.79		0.57	0.55		0.43	0.46
HadGEM2	0.67	1.05	0.77		0.74	0.99		0.56	0.68		0.15	0.33
HadGEM3-GC31-LL	0.66	0.74	0.56		0.82	0.90		0.70	0.75		0.33	0.48
IPSL-CM6A-LR	0.80	0.78	0.81		0.95			0.72			0.46	
MIROC6	0.78	0.75	0.63		0.92			0.91			0.41	
MRI-ESM2-0	0.83	0.97	0.81		0.87			0.68			0.35	
MPI-ESM1-2-LR	0.63	0.52	0.61		0.90	0.91		0.63	0.63		0.39	0.33
MEAN	0.72	0.76	0.68		0.86	0.87		0.69	0.65		0.41	0.40
1.645*sigma	0.16	0.22	0.19		0.14	0.15		0.15	0.11		0.19	0.09

25

26

Table S3: Cloud radiative effect feedback parameters in *amip-piForcing* and *hadSST-piForcing* simulations over various historical time-periods, as well as

***abrupt-4xCO2* sensitivity parameters.**

	abrupt-4xCO2				$\lambda_{1871\text{-}2010}$ (W m^{-2} K^{-1})			$\lambda_{1871\text{-}1980}$ (W m^{-2} K^{-1})			$\lambda_{1981\text{-}2010}$ (W m^{-2} K^{-1})	
	λ_{4xCO2} (W m^{-2} K^{-1})	$\lambda_{4xCO2\_1\text{-}20}$ (W m^{-2} K^{-1})	$\lambda_{4xCO2\_21\text{-}150}$ (W m^{-2} K^{-1})		AMIP	HadISST1		AMIP	HadISST1		AMIP	HadISST1
CAM4	-0.15	-0.37	0.08		-1.02	-0.67		0.00	-0.15		-1.15	-0.89
CESM2	0.62	-0.01	0.81		-0.52			0.40			-0.96	
CNRM-CM6-1	0.20	0.03	0.27		-0.10			0.10			0.12	
CanESM5	0.41	0.37	0.48		-0.08			0.49			-0.09	
ECHAM6_3	-0.27	-0.39	-0.08		-0.73	-0.45		-0.10	-0.08		-0.91	-0.64
GFDL-AM3	0.51	0.25	0.65		-0.03	0.09		0.51	0.34		-0.18	0.43
GFDL-AM4	0.18	-0.43	0.51		-0.39	-0.27		0.10	0.09		-0.60	-0.97
HadAM3	0.16	0.01	0.38		-0.29	-0.15		0.11	0.07		-0.41	-0.16
HadGEM2	0.36	-0.05	0.54		-0.04	0.05		0.28	0.21		-0.26	0.07
HadGEM3-GC31-LL	0.51	0.33	0.61		0.17	0.26		0.43	0.48		0.08	0.21
IPSL-CM6A-LR	0.01	-0.17	0.13		-0.64			-0.08			-1.01	
MIROC6	-0.29	-0.36	-0.32		-0.51			-0.34			-0.12	
MRI-ESM2-0	0.01	-0.60	0.27		-0.57			0.02			-0.68	
MPI-ESM1-2-LR	-0.24	-0.32	-0.17		-0.72	-0.49		-0.05	-0.17		-0.82	-0.59
MEAN	0.14	-0.12	0.30		-0.39	-0.20		0.13	0.10		-0.50	-0.32
1.645*sigma	0.49	0.48	0.53		0.54	0.50		0.40	0.36		0.68	0.81

35

Table S4: Growth of the historical feedback parameter, λ_{hist}, from 2010 to 2014 in *amip-piForcing* and *hadSST-piForcing*. Shown is λ_{hist} calculated over 1871-2010 and 1871-2014, and their difference.

	AMIP λ_{hist} (W m^{-2} K^{-1})				HadSST λ_{hist} (W m^{-2} K^{-1})		
	1871-2010	**1871-2014**	**change**		**1871-2010**	**1871-2014**	**change**
CAM4	-2.14	-2.24	-0.10		-1.77	-1.81	-0.05
CESM2	-1.93	-2.09	-0.16		-	-	-
CNRM-CM6-1	-1.23	-1.27	-0.04		-	-	-
CanESM5	-1.44	-1.48	-0.04		-	-	-
GFDL-AM3	-1.44	-1.48	-0.04		-1.35	-1.38	-0.03
GFDL-AM4	-1.84	-1.90	-0.07		-1.66	-1.68	-0.01
HadGEM3-GC31-LL	-1.28	-1.33	-0.04		-1.01	-1.09	-0.08
IPSL-CM6A-LR	-1.59	-1.65	-0.06		-	-	-
MIROC6	-1.42	-1.50	-0.08		-	-	-
MRI-ESM2-0	-1.93	-1.97	-0.05		-	-	-
MPI-ESM1-2-LR	-1.88	-1.92	-0.04		-1.58	-1.64	-0.06
MEAN	-1.65	-1.71	-0.07		-1.47	-1.52	-0.05
1.645*sigma	0.48	0.51	0.06		0.45	0.42	0.04

39